

ТРОФИМЕНКО, А.Т.

10(2) PHASE I BOOK EXPLOITATION SOV/4271

Soveshchaniye po prikladnoy gazovoy dinamike. Alma-Ata, 1956

Trudy (Transactions of the Conference on Applied Gas Dynamics) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1959. 235 p. Errata slip inserted.

Sponsoring Agency: Kazakhskiy gosudarstvennyy universitet imeni S.M. Kirova,

Ed.: V.V. Aleksandriyev, Tech. Ed.: Z.P. Rokitskiy; Editorial Board: L.A. Vulis (Resp. Ed.), V.P. Kashkarov, T.P. Leont'yev, and B.P. Ustinenko.

PURPOSE: This book should be of interest to scientists and engineers working on problems of applied gas dynamics and may be of use to students.

COVERAGE: This book presents reports and brief summaries of the discussions which took place at the Conference on Applied Gas Dynamics in Alma-Ata in October 1956. The conference was subdivided into three areas of applied gas dynamics: jet flows of fluids and gases, the aerodynamics of heating processes, and the discharge of a fluid. The practical value of the "Transactions of the Conference" consists in the development of theory, methods of technical calculation and methods for systematic measurement applied to heating, furnace, and other industrial processes for which, in most cases, aerodynamic phenomena are decisive factors.

Vulis, L.A. Basic Results and Further Problems in the Investigation of Jet-like Motions of Fluids and Gases 89

Iantsky, S.I. On the Turbulent Wake Behind a Body in a Two-dimensional Flow 39

Brief Summary of the Discussions 44

Session of October 24, 1956 (morning)

Antonov, G.S. Investigation of the Turbulence Characteristics of a Free Nonisothermal Jet and on Open Torch 45

Kashkarov, V.P. On the Motion in the Same and in Opposite Directions of Two Uniform Compressible-gas Flows 55

Leont'yev, T.P. Propagation of Axially Symmetrical Jets in Flows in the Same and in Opposite Directions 62

Bukhman, S.V. Laws of Motion and Laws of Combustion of Carbon Particles 69

Mazurek, M.M., and M.I. Pol'akiy. On the Critical Conditions for the Flow of a Viscous Gas in a Plane-parallel Channel 69

Brief Summary of the Discussions 73

Session of October 24, 1956 (evening)

Sazakhina, M.M. Propagation of an Axially Symmetrical Gas Jet in a Gas Medium of Any Density 77

Chebrakov, P.Y. Electrothermometers from MI (All-Union Electrotechnical Institute) and Their Use in the Investigation of Nonisothermal Gas Flows 85

Trofimenko, A.T. Investigation of a Seabounded Jet 100 (1)

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001756620015-8

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001756620015-8"

AUBAKIROVA, V. R.; TROFIMENKO, A. T.

Study of the motion of a nonisothermal jet moving along a
hard surface. Izv. AN Kazakh. SSR, Ser. energ. no.2:55-62
'62. (MIRA 16:1)

(Fluid dynamics)

TROFIMENKO, B., starshina sverkhstrochnoy sluzhby

Having stepped over the threshold of the barracks. Starsh.-serzh.
no.11:14-15 O[i.e. N] '61. (MIRA 15:2)
(Military education)

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TRUFIMENKO, B. S.

TRUFIMENKO, B. S. -- "Chemicotechnological Study of Fruits and Berries of the Forest-
Steppe of the Ukraine." Moscow Order of Lenin Agricultural Acad imeni K. A. Timiryazev,
Moscow, 1955 (Dissertation For the Degree of Candidate in Agricultural Sciences)

SC: Knizhnaya letopis', No. 32, 3 September 1955

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PERMITS AND PRIORITIES INDEX																										140 AND 4TH ORDERS																									
SA																										B-64																									
621.316.1.051.24 : 621.3.014.1																																																			
<p>0786. Determination of the current distribution in a ring main. D. E. TROTSKY, <i>Elektrichesk</i> (No. 6) 6-12 (June, 1930) in <i>Russian</i>.</p> <p>The usual methods do not enable the current distribution to be determined directly. The methods suggested are intended for ring mains containing transformers with differing transformation ratios and auto-transformers for voltage regulation. The first method, an analytical one, uses a complex representation of the transformation ratios, in which the phase relations between primary and secondary can be considered without complicating the system of equations determining the current distribution. The losses in the system can also be found from the same equations. In the simpler case where the transformers have equal transformation ratios, the resulting relations have the form corresponding to a main fed at either end. An alternative graphical method is also given and an example added with full calculation.</p> <p>D. F. BRAUS</p>																																																			
ASH-56A METALLURGICAL LITERATURE CLASSIFICATION																																																			
REGIONAL SYMBOLS																										REGIONAL SYMBOLS																									
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DOCENT D. Ye. Trofimenko

USSR/Electricity - Systems, Power Jun 51
Regulation, Voltage

"An Analytical Method of Determining the
Static Power Limit in a Two-Machine Sys-
tem," Docent D. Ye. Trofimenko, Cand Tech
Sci, Ural Polytech Inst imeni Kirov

"Elektrichestvo" No 6, pp 12-15

Gives new method of detg the static power
limit in a 2-machine system without resort-
ing to consecutive approximations. Sub-
mitted 20 Feb 51

200T9

YE TROFIMENKO, DOCENT D.

232T57

USSR/Electricity - Power Systems
Stability

Sep 52

"Method of Calculating the Permissible Duration
of a Short-Circuit in a Two-Machine System,"
Docent D. Ye Trofimenko, Card Tech Sci, Ural
Polytech Inst imeni Kirov

"Elektrichestvo" No 9, pp 61-67

Gives a method which permits one to find the
approx permissible duration of emergency oper-
ating conditions from the generalized para-
meters of a system consisting of 2 stations.
Submitted 28 May 51.

232T57

TRCFIMENKO, D. E.

Electrical Engineering Abstracts
May 1954
Transformers

1914. Efficiency of impulse excitation by rectifiers on the improvement of the dynamic stability of long-distance transmission. D. E. TRCFIMENKO. *Elektricheskoye*, 1954, No. 1, 12-14. In Russian.

An investigation for establishing the influence of the time constant of the exciter and of the "ceiling" of the excitation on the dynamic stability of a long-distance transmission in the first cycle of hunting. The calculations, based on three different transmission systems with differing characteristics, but equal generator parameters, were carried out for the case of a 2-ph. short-circuit to earth in one of the circuits of the transmission system behind the line circuit-breaker of a hydro-electric station, for various values of the transmitted power and time constants and for two values of the excitation "ceiling" (double and fourfold). At first the permissible durations of the short-circuit were calculated on the assumption that the dynamic stability was maintained during the first cycle of hunting; from the graphs plotted, the limits of the dynamic stability were determined by the method of successive intervals, considering the variation in time of the stator reaction, and the effect of the impulse excitation, but neglecting saturation and damping torque. It was assumed that the impulse excitation is activated by a voltage relay responding at a voltage 96% of the normal one, within 0.04 sec and with a resetting factor equal to unity. All the results show that impulse excitation does not introduce any marked improvement in the dynamical stability compared with modern machine-excitors. D. F. KRAUS

8-13-54

TROFIMENKO, D. Ye., kand. tekhn. nauk, dotsent;

Resynchronization of a hydrogenerator by electric braking.
Elektricheskoye no. 6: 21-23 Je'64. (MIRA 1787)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

TROFIMENKO, D.Ye., kandidat tekhnicheskikh nauk.

"Electric power systems and their operating processes." I.M.Markovich.
Reviewed by D.E.Trofimenko. Elek.sta. 25 no.12:55-57 D '54.(MIRA 7:12)
(Electric power production) (Markovich, I.M.)

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001756620015-8

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001756620015-8"

TROFIMENKO, D.Ye., kand.tekhn.nauk dots.

Method of economic calculation taking the utilization of the
saved capital expenditure into account. Izv.vys.ucheb.zav.;
energ. 2 no.6:122-128 Ja '59. (MIRA 13:2)

1. Ural'skiy politekhnicheskii institut imeni S.M.Kirova.
Predstavlena kafedrami elektrostantsiy, setey i sistem,
ekonomiki i organizatsii energeticheskogo proizvodstva.
(Power engineering)

TROFIMENKO, D.Ye., kand.tekhn.nauk dots.

Methods for the determination of the most advantageous reactive power loading of stations and of the most economical distribution of static capacitors among the consumers of the system. Izv. vys.ucheb.zav.; energ. 2 no.9:1-9 S '59.
(MIRA 13:2)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.
Predstavlena kafedroy elektricheskikh stantsiy, setey i sistem.
(Electric power distribution)

TROFIMENKO, D.Ye.

Modes of operation and economic indices of 1500 to 2500 km. long
a.c. power transmission lines with 600 to 800 kv. ratings. Trudy
Transp. energ. inst. Sib. otd. AN SSSR no.14:131-140 '62.
(iMRA 16:9)

(Electric power distribution)

KRICHENOVA, I.A., kand.tekhn.nauk, dotsent; TROFIMENKO, D.Ye., kand.tekhn.
nauk, dotsent

Expediency of using 900-1,000 kv. voltages in long-distance power
transmission lines. Izv. vys. ucheb. zav.; energ. 6 no.8:8-14
Ag '63. (MIRA 16:9)

1. Ural'skiy politekhnicheskiy institut imeni Kirova. Predstavlena
kafedroy elektricheskikh stantsiy, setey i sistem.
(Electric power distribution)

TROFIMENKO, D.Ya., kand. tekhn. nauk (Sverdlovsk)

Transmission of electric power at great distances. Elektrichestvo
no.5:87-88 My '63. (MIRA 16:7)

(Electric power distribution)

TROFIMENKO, D.Ye., kand.tekhn.nauk, dotsent

Concerning the heating of overhead power transmission lines by
the sun. Izv. vys. ucheb. zav.; energ. 5 no.7:31-33 J1 '62.
(MIRA 15:7)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.
Predstavlena kafedroy elektricheskikh stantsiy, setey i sistem.
(Electric lines--Overhead) (Electric power distribution)

TROFIMENKO, D.Ye., kand.tekhn.nauk, dotsent

Stability of hydrogenerator with presence of electric braking.
Elektrichestvo no.2:27-30 F '62. (MIRA 15:2)

1. Ural'skiy politekhnicheskii institut im. Kirova.
(Turbogenerators)

S/143/62/000/007/001/003
D238/D308

AUTHOR: Trofimenko, D.Ye., Candidate of Technical Sciences,
Docent

TITLE: The heating of overhead lines by solar radiation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Energetika,
no. 7, 1962, 31 - 33

TEXT: A simple and fairly precise relationship is obtained for the temperature rise due to solar radiation on a current-carrying conductor. Curves describing the permissible loading on a conductor heated also by solar radiation, expressed as percentages of the permissible loadings without solar heating, demonstrate that when temperature rise due to solar radiations is 5°C the continuous permissible loading must be reduced by 5 - 7 %, when it is 10°C by 11 - 15 %, when it is 15°C by 17 - 24 % and when it is 20°C by 23 - 33 %; the first figures refer to an air temperature 20°C and the second to 35°C. Final temperatures calculated for different air speeds and temperatures indicate that the conductor temperature rise due to solar heating is approx-

Card 1/2

The heating of overhead lines ...

S/143/62/000/007/001/003
D238/D308

imately equal to the temperature rise in the unloaded state. The errors in calculating the final temperature are within 2 - 3 %. There is 1 figure. ✓

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M. Kirova
(Ural Polytechnic Institute imeni S.M. Kirov)

SUBMITTED: May 16, 1961

Card 2/2

KRICHENOVA, I.A., kand. tekhn. nauk, dots.; TROFIMENKO, D.Ye., kand. tekhn. nauk,
dots.

Calculation curves of short circuit currents of the compound-wound
generator. Trudy Ural. politekh. inst. no.90:133-141 '58.

(MIRA 13:2)

(Electric currents) (Electric generators)

621.313.32 : 621.311.154
3631. Analytical method of determining the internal power limit of a system of two machines. D. E. IREKHIMINAKH. *Fizicheskoye*, No. 6, 12-15 (June, 1951) In Russian.

In the voltage control of generators by hand or by automatic regulators with a zone of insensitivity the static power limit is determined by the internal characteristics of the generators and called the internal power limit. If the system comprises two or more power stations, the calculation of the e.m.f.'s of the generators corresponding to the internal power limit is a difficult problem which had previously to be solved by laborious successive approximations. Yet it must be solved in order to determine the static stability of the system. The method presented avoids these complications and applies to systems comprising two stations or reducible to the case of two stations. It is based on the following simplifying assumptions: (1) linear no-load characteristics of the generators; (2) equal phase and quadrature synchronous reactances of the generators; (3) loads may be represented by constant impedances. The system may then be represented by a system of constant quadrupoles which are reducible to yield a formula for the ready solution of the simplified problem which is accurate enough for many practical purposes. B. F. KRAEM

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

TROFIMENKO, D.Ye., kand.tekhn.nauk

Calculation of current distribution in a complex a.c. network by use a d.c. simulating model. Elek.sta. 31 no.4:
46-48 Ap '60. (MIRA 13:7)
(Electric circuits)

TROFIMENKO, D.Ye., kand.tekhn.nauk, dotsent

Method for calculating complex transformer-coupled networks.
Izv.vys.ucheb.zav.; energ. no.5:20-24 My '58. (MIRA 11:8)

1.Ural'skiy politekhnicheskii institut imeni S.M. Kirova.
(Electric networks)

TROFIMENKO, F.

Superiority of the brigade method for repairing calculating
machines. Den. 1 kred. 17 no.3:67-68 Kr '59. (MIRA 12:4)
(Calculating machines)

TRC

0413/0308

AUTHORS: Pokhilo, N.I., Dud'ko, O.A. and Trofimenko, G.A.
TITLE: A temperature regulator of improved accuracy for thermostats
PERIODICAL: Referativnyy zhurnal, Avtomatika, telemekhanika i vychislitel'naya tekhnika, no. 1, 1963, 46, abstract 14258 (Nauchn. zap. Odessk. politekhn. in-t, v. 38, 1962, 64-69)

TEXT: An accurate temperature regulator has been developed for thermostats used in biological and other investigations with a working volume of 1 m³. In tests of the regulator, the greatest temperature deviation from the set value at any point of the working chamber did not exceed $\pm 0.3^{\circ}\text{C}$. A high-stability copper wire resistance thermometer serves as the temperature sensor. To increase the accuracy of regulation, feedback is introduced through an additional sensor heater which is switched in by the controlling relay contacts at the same time as the thermostat heater elements. The

Card 1/2

A temperature regulator ...

S/271/63/000/001/019/047
D413/0308

sensor is connected in a bridge circuit. The output voltage from the bridge diagonal is fed to the input of a three-stage DC-coupled transistorized voltage amplifier. The power amplifier is a twin-transistor phase-sensitive circuit. Variation of ambient temperature up to + 60°C and variation of supply voltage from - 20 to +10% had practically no effect on the operation of the regulator. 7 references.

[Abstracter's note: Complete translation]

Card 2/2

SITAJ, S.; NIEPEL, G.; SEBO, M.; KOSTKA, D.; TRNAVSKY, K.; SIPOS, J.

Apropos of the incidence of progressive arthritis. (Epidemiological study). Bratisl. lek. listy 2 no.1:16-24 '64

1. Vyskumny ustav reumatickych chorob v Piestanoch (veduci: doc. MUDr. S. Sitaj).

TRNAVSKY, K.; TRNAVSKA, Z.; MALINSKIY, J.

Effect of phenylbutazone on biochemical changes in experimental granuloma. Cas. lek. cesk. 103 no.20:550-554 15 My'64.

1. Vyzkumny ustav revmatickych chorob, pobor'a Plestant (prednosta: doc. dr. S.S'tij) a Pracoviste elektronove mikroskopie lekarske fakulty PU [Palackeho university] v Olomouci (vedouci MUDr. J.Malinsky).

JILEK, M.; TRNKA, J.; ZAHRADNICEK, O.

Favre-Racouchot disease. Cesk. dermat. 29 no.3:173-175 My'64

1. I. dermato-venerologicka klinika fakulty vseobecneho lekar-
stvi KU [Karlovy university) v Praze; prednosta: prof. dr. J.
Konopik, DrSc.

LAUROVA, L.; MACKU, F.; TRNKA, V.

Some coments and experiences with the Aldridge techmic
of abdominal hysterectomy. Cesk. gynek. 29 no.5:331-333
Je'64.

1. II. gyn.-por. klin. lek. fak. vseob. lek. KU [Karlovy
University] v Praze; prednosta: prof. dr. J. Lukas, DrSo.

TROFIMENKO, I.

Austrian industrial exhibition in Moscow. Vnesh. torg. 29
no.6:19-22 '59. (MIRA 12:9)
(Moscow--Exhibitions)

TROFIMENKO, I.

The growing ties of friendship and cooperation between the
U.S.S.R. and Ethiopia. Vnesh.torg. 29 no.8:7-9

(MIRA 12:11)

(Russia--Foreign economic relations--Ethiopia)

(Ethiopia--Foreign economic relations--Russia)

TROFIMENKO, I.

Soviet Union in Earls Court. Vnesh. torg. 41 no.8:insert 8 p.
'61. (MIRA 14:8)

(London--Exhibitions)
(Russia--Industries)

TROFIMENKO, I. T.

MICROWAVES

"Mutual Synchronization of Reflex Klystrons Without Discontinuities in Amplitude and Frequency", by R. B. Braginskiy, S. D. Grozdover, A. S. Gorshkov, and I. T. Trofimenko, Radiotekhnika i Elektronika, No 8, August 1957, pp. 1048-1052.

The purpose of this experimental investigation was to obtain a wide band of electronic frequency retuning. The authors have established the region of the values of fundamental parameters, in which klystrons operate in synchronism without discontinuities in amplitude and frequency of the generated oscillations. The resultant range over which electronic frequency detuning is possible is three times greater than obtained with a single klystron. Although the simultaneous operation of klystrons was already considered previously by Abdel Dayen (Synchronization of Reflex Oscillators, Zhurich, 1953), the mutual synchronization studied there was under identical transit angles, and the purpose of that investigation was an increase in the general output power in the center of the oscillation region. The problem of extending the range of electronic returning of the generated of the generated frequency was not touched upon there at all.

Card 1/1

Physics Faculty, Moscow State Univ. in Lomonosov

SOV-120-58-3-32/33

AUTHORS: Akhmanov, S. A., Gvozdozer, S. D., Konstantinov, Yu. S.,
and Trofimenko, I. T.

TITLE: Application of a TWT-Generator and the Observation of
Electron Paramagnetic Resonance (Ispol'zovaniye LBV-
generatora dlya nablyudeniya elektronnoy paramagnitnoy
rezonansy)

PERIODICAL: Priroda i Tekhnika Eksperimenta, 1958, Nr 3, p 109
(USSR)

ABSTRACT: A travelling wave tube (TWT) connected across an external feedback circuit may be used as a generator of u.h.f. vibrations (Refs.1 and 2). The frequency of the vibrations is determined by a resonator in the feedback circuit. Such a generator has been used by the authors in the 3 cm region in the observation of electron paramagnetic resonance. The specimen under investigation (diphenylpicrylhydrazyl) was placed directly in the generator circuit and in the electromagnet gap. The uniformity of the external magnetic field was sufficiently high and had no effect on the form of absorption lines. The absorption signal was detected by a crystal detector placed in the feedback channel. As the feedback is reduced and the oscillation threshold is approached the sensitivity of the TWT

Card 1/2

SOV-120-58-3-32/33

Application of a TWT-Generator and the Observation of Electron
Paramagnetic Resonance

generator increases. In the observation of an absorption signal recorded on the screen of an oscilloscope, the signal-to-noise ratio for a specimen containing 2×10^{-8} moles of diphenylpicrylhydrazyl was not less than 4:1 (bandwidth of the low frequency oscillator was 2 kc/s). There are no figures or tables. Of the two references, 1 is Soviet and 1 is English.

ASSOCIATION: Fizicheskii fakul'tet MGU (Department of Physics of the Moscow State University)

SUBMITTED: March 11, 1958.

1. Vibration---Propagation 2. Traveling wave tubes---
Applications 3. Resonance---Magnetic factors

Card 2/2

SOV/120-59-2-11/50

AUTHORS: Akhmanov, S.A., Gvozdover, S.D., Konstantinov, Yu.S.,
and Trofimenko, I.T.

TITLE: An Autodyne 3 cm Radiospectroscope for Electron Paramagnetic
Resonance Studies (Avtodinnyy radiospektroskop
3-santimetrovogo diapazona dlya nablyudeniya elektronnoy
paramagnitnoy rezonansy)

PERIODICAL: Priroda i tekhnika eksperimenta, 1959, Nr 2, pp 38-40
(USSR)

ABSTRACT: A travelling-wave tube is fitted with variable phase-
shifters and a ferrite isolator and is used in a
regenerative (or super-regenerative) mode. The
oscillation frequency is that of the cavity containing
the specimen. The system is tested on DPPH; 2×10^{-8} mole
is readily detected in the autodyne mode. The magnet
is normal; a simple crystal-video detection system is
used. The quenching frequency (20-30 kc/s) used in the
super-regenerative mode is applied to the spiral on the
travelling-wave tube. The sensitivity can, in
favourable cases, be increased by a factor of 2-3, but

Card 1/2

SOV/120-59-2-11/50

An Autodyne 3 cm Radiospectroscope for Electron Paramagnetic Resonance Studies

superheterodyne or other methods are needed to give any further improvement.

Card 2/2 There are 2 figures and 4 references, of which 2 are Soviet and 2 English.

ASSOCIATION: Fizicheskiy fakul'tet MGU

(Physics Department, Moscow State University)

SUBMITTED: January 14, 1958

ACCESSION NR: AP4038641

S/0109/64/009/005/0822/0829

AUTHOR: Marchenko, V. F.; Trofimenko, I. T.

TITLE: Experimental investigation of a subharmonic oscillator

SOURCE: Radiotekhnika i elektronika, v. 9, no. 5, 1964, 822-829

TOPIC TAGS: oscillator, subharmonic oscillatory;
computer, digital computer

ABSTRACT: A fundamental shortcoming of the 1850-mc semiconductor-diode subharmonic oscillator (I. Abeyta, et al., Proc. IRE, 1961, 49, 1, 128) is that it uses two parametric diodes, which makes tuning complicated and impairs reliability. The present article suggests filters for the input-output channel separation. The oscillator includes a subharmonic circuit, an input pumping channel that rejects the subharmonic frequency, and an output subharmonic channel with a filter rejecting the pumping signal. A 2500-3000-mc oscillator

Card 1/3

ACCESSION NR: AP4038641

microstrip design is shown in Fig. 1 of the Enclosure. Formulas and methods of calculating the oscillator components are given. These experimental curves are submitted: resonant frequency vs. diode bias voltage; output subharmonic power vs. input pumping power for various degrees of oscillator-load coupling; threshold pumping power vs. pumping frequency for two oscillator resonant frequencies. The phase locking-in of the oscillator by a weak external signal was also investigated. "The authors wish to thank S. A. Akhmanov for his constant attention to the work, and M. A. Kashintsev for his help in carrying out the measurements." Orig. art. has: 7 figures and 2 formulas.

ASSOCIATION: Fizicheskiy fakultet Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Physics Faculty, Moscow State University)

SUBMITTED: 19Mar63

ATD PRESS: 3073

ENCL: 01

SUB CODE: EC

NO REF SOV: 002

OTHER: 003

Card 2/3

ACCESSION NR: AP4038641

ENCLOSURE: 01

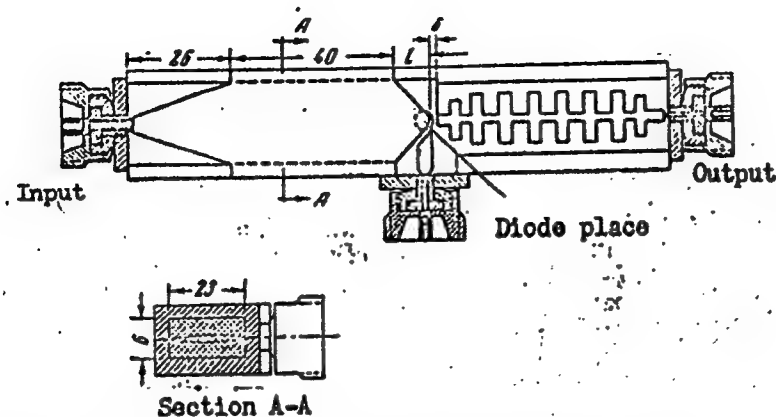


Fig. 1. Parametric subharmonic SHF oscillator designed with microstrips

Card 3/3

Trofimenko, I.T.

9.4231

21602
S/109/60/005/010/025/031
E073/E482

AUTHORS: Akulina, D.K., Akhmanov, S.A., Gvozdever, S.D.,
Gorshkov, A.S. and Trofimenko, I.T.
TITLE: Parametric Phenomena in Wave Systems With Long Electron
Beams
PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10,
pp.1736-1739

TEXT: The phenomenon of parametric regeneration which was first
investigated by L.I.Mandel'shtam and his associates (Ref.1) in
systems with lumped constants may also occur in wave systems
(Ref.2). The considerable interest in wave systems with
modulated parameters is due to the prospects of building stable
amplifiers and frequency converters with a very wide band which are
simple to tune and are unidirectional. In principle, it is
possible to obtain in the wave systems noise characteristics which
are the same as those obtained in parametric circuit amplifiers.
One of the possible variants of wave systems with modulated
parameters are wave systems with long electron streams. First, a
freely drifting beam of electrons represents a form of transmission
line; modulation of the current density by a strong pump signal is
Card 1/5

21602
5/109/60/005/010/025/031
E075/E482

Parametric Phenomena ...

analogous to some extent to the modulation of the distributed parameters of a transmission line (Ref.3 and 4). Another example of a waveguide system in which the modulation of the density of the electron beam can lead to parametric effects is a system consisting of a beam of electrons linked with a delay system. Wave systems with long electron beams are at present one of the most suitable fields for studying parametric phenomena in wave systems, since it is difficult to produce purely distributed wave systems with semiconductors and ferrites. In this paper the results are briefly described of experiments on parametric amplification and transformation of the frequency in wave systems with long electron beams in which the interaction of the electrons with the high frequency field in the longitudinal direction is utilized (see also earlier work of the authors, Ref.5 and 6). The experiments were made in the centimetre ($f_c \approx 3000 - 3500$ Mc/s, frequency of $f_H \approx 6000$ Mc/s) and the decimetre ($f_c \approx 1000 - 1800$ Mc/s, $f_H \approx 3000 - 3500$ Mc/s) ranges. In the experimental set-up both the pump source and the signal were introduced into the electron beam by means of sections of helical lines. The main beam of the electrons first passed

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E073/E482

Parametric Phenomena ...

through the first helix in which it was modulated by the pump signal and then into the second part of the tube where it interacted with the signal. The interaction was realized either in a drift tube (for feeding in and for extracting the signal, small sections of helical lines were used) or in the helical line. The power of the pump signal at the input and the output of the first helix was monitored; measures were provided for filtering the pump signal on the indicating apparatus. The block schematic is given. The parametric amplification was clearly observed in systems of both types for powers of the pump source varying between 200 μ W and 1W. A common feature was the very wide band of the parametric amplification. Thus, in the decimetre range, the amplification was in a band of about 500 to 600 Mc/s with very little change in the gain for the band of the pump source of 200 to 300 Mc/s. In conclusion, the following is stated. Parametric amplification in wave systems with electron beams extends over a very wide band; for pump signal powers of 10 to 100 mW in systems with lengths not exceeding the dimensions of ordinary TWT, a real gain of about 20 db and more can be achieved. Comparison of the experimental data with results of Card 3/3 ✓

Parametric Phenomena ...

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calculations by W. Loisel and C. Quate (Ref. 3 and 8) shows that the theory does not adequately explain the observed phenomenon. Firstly, disregarding of the combination frequencies is not justified and, secondly, various phenomena, as for instance the non-monotonic relationship between the coefficient of parametric amplification and the power of the pump source etc, are not explained by the work of Loisel. On the other hand, a number of experimental facts are in qualitative agreement with the theory: for instance, the selective properties of the investigated systems, the dependence of the coefficient of parametric amplification on the voltage of the beam for systems with a beam and a delay line. In the investigations described, no special measures were taken for picking up the noise energy: the minimum noise coefficient of the systems investigated was at the level of the noise of the appropriate travelling wave tubes. Even in their present state electron wave parametric systems may be of interest from the point of view of wide band mixing and division of frequencies. Acknowledgments are expressed to A.S. Tager for his comments on the results and to V.G. Dmitriyev and A.A. Oveyannikov for their

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5/109/60/005/010/023/031
E073/E482

Parametric Phenomena ...

assistance with the measurements. There are 2 figures and
6 references: 4 Soviet and 4 non-Soviet.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo
universiteta im. M.V.Lomonosova Kafedra radiotekhniki
(Physics Department, Moscow State University imeni
M.V.Lomonosov, Radioengineering Chair)

SUBMITTED: October 30, 1959 (initially)
May 3, 1960 (after revision)

X

Card 3/3

S/141/61/004/002/011/017
E192/E382

9.4230 (1532)

AUTHORS: Akhmanov, S.A., Gorshkov, A.S. and Trofimenko, I.T.
TITLE: Frequency-division at Ultrahigh Frequencies by Means
of Travelling-wave Tubes

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,
Radiofizika, 1961, Vol. 4, No. 2, pp. 309 - 318

TEXT: The problem of developing efficient and reliable
frequency-dividers for the UHF range is still considered to
be unsolved, in spite of the need for such devices. Frequency-
dividers for these frequencies can be based on the same
principle as those employed at radio frequencies. In general,
it is required to develop dividers having comparatively large
operating bandwidths. The authors are of the opinion that a
a travelling-wave tube (TWT) with separate helices (see Fig. 1)
can be used as a frequency-divider for UHF. In this device the
electron beam passes through a number of helices which are
used for wide-band amplification of different frequencies; the
potential of each helix is chosen so as to obtain optimum
interaction between the beam and the helix. The tube of Fig. 1

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Frequency-division

consists of: 1 - electron gun; 2 - electron beam; 3, 4, 5 and 6 - delay helices and 7 - collector. The signals to be amplified can be applied to the inputs of various helices; in the same way, it is possible to effect mixing or multiplication. The separate portions of the tube can be bridged-over with external feedback circuits. The preceding "stages" can be used for injecting the signals which interact with the oscillations of the system. It is possible to eliminate almost completely the effect of the oscillations on the signal. A TWT with separate helices should, therefore, result in a flexible device permitting an efficient mixing of signals and it should have some advantages as compared with klystrons (Ref. 1 - Ye.N. Bazarov, M.Ye. Zhabotinskiy, Radiotekhnika i elektronika, 1956, 1, 680; Ref. 2 - H. Lyons - J. Appl. Phys., 21, 59, 1950). A regenerative frequency-divider and a resonance frequency-divider based on this type of tube were investigated experimentally. The regenerative frequency-divider or mixer gave a division ratio of 3:4, the input frequency being 4 200 Mc/s. this tube was in the form of

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Frequency-division

a two-helix TWT. The first helix of the tube was used for wideband amplification (bandwidth of 600 Mc/s) of signals at frequencies around 4 000 Mc/s. while the second helix was employed for the amplification of signals in the frequency range 1 500 - 1 000 Mc/s. The signal and the local oscillator frequencies were applied to a common waveguide which was matched with the first helix; this helix was terminated with a matched load, whose function was to eliminate any tendency to self-excitation. The difference-frequency signal was obtained by means of a coaxial cable, which was matched with the output of the second helix. In the design of this frequency-divider or mixer attention was paid to the investigation of its transfer coefficient and its operating bandwidth. The experiments showed that it was possible to obtain operating conditions under which considerable gain could be obtained in the process. The transfer coefficient was between 15 - 20 db (and even 30 db) over a wide range of frequencies (a bandwidth of 400 Mc/s). The frequency characteristics of such a mixer are illustrated in Fig. 2. This shows the transfer coefficient of the mixer as a

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function of the input frequency f_1 signal and the difference frequency f_2 . The local oscillator frequency for the experiment illustrated in this figure was $f_{\text{LO}} = 4\,225\text{ Mc/s}$:

the collector current for the Curve(a) was 1.1 mA and for the other curve it was 1.8 mA. It was found from the experiments that the value of the transfer coefficient increased with increasing collector currents; however, at comparatively large currents it was possible to observe the regenerative effect. Optimum conditions with regard to maximum efficiency of the signal mixing were achieved when the operating voltage of the first helix was about 30 - 40 V lower than that corresponding to the maximum of the TWT gain. The overall conversion gain exceeded the gain of TWT in both the helices by at least 5 db. It had been shown earlier by one of the authors^{et al} (Ref. 7 - Radiotekhnika i elektronika, 1960, 5, 1736) that the parametric effects could play a significant part in the operation of a TWT mixer. The difference-frequency of the mixer corresponds to the difference-frequency of a travelling-wave parametric

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amplifier. In fact, the parametric-amplification conditions represent an optimum for a TWT mixer. Consequently, the magnitude of the mixer transfer coefficient can be estimated on the basis of the formulae derived for the parametric waveguide amplifying systems (Ref. 5 - P.K. Tien - J. Appl. Phys., 29, 1958, 1347; Ref. 6 - W. Loisell, G. Quate - Proc. IRE, 46, 707, 1958, Ref. 8 - W. Loisell - J. Electron. and Control, 6, 1, 1959). However, the overall transfer coefficient in an actual TWT mixer is determined by the frequency-conversion process as well as the gain in the first and second helices. The second divider is based on the resonance of the second kind and the harmonic locking effect. An experimental tube of this type was constructed. The first helix of this tube was used for injecting the signal to be divided into the electron beam, the frequency being $2f = 6\ 000\ \text{Mc/s}$; the second helix formed a delay system with an external feedback and was tuned to the frequency of $f = 3\ 000\ \text{Mc/s}$. The frequency of the oscillator was primarily determined by the resonance frequency of the resonance circuit in the feedback loop, which suppressed the

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undesired oscillation modes. Depending on the damping of the attenuator, which was connected in the feedback circuit, the operating conditions of the TWT could be such as to produce oscillations or potential instability (resonance of the second kind). This system has two advantages as compared with a klystron divider: 1) the signal to be divided is introduced into the electron beam by means of a separate helix and this results in an efficient interaction between the signal and the tube and permits a 40-50 db decoupling between the tube and the signal source; 2) the relative frequency drift of the divider can be made smaller than in the klystron. In particular, this drift can be made as low as 3×10^{-6} if the tube is supplied from a battery and the effective quality factor of its resonator is $Q_N = 3 \times 10^2$. The above results show that

TWT frequency-dividers with separate helices have considerable advantages; in particular, it is possible to obtain large operating bandwidths. On the other hand, it should be pointed out that the harmonic locking effect and the resonance of the

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Frequency-division

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n-th kind is probably of little use in practice since this type of frequency-division can be efficiently performed by semiconductor diodes with nonlinear capacitance (Ref. 10 - D. Leenov, A. Uhler - Proc. IRE, 47, 1724, 1959). The authors express their gratitude to D.K. Akulina for great help in this work and for discussing the results. The authors also thank S.D. Gvozdover for his constant interest in this work. There are 5 figures and 11 references: 3 Soviet and 8 non-Soviet. Two of the four latest English-language references not quoted in the text are: Ref. 3 - R. de Grasse, G. Wade - Proc. IRE, 45, 1013, 1957 and Ref. 9 - C. Page, Proc. IRE, 46, 1738, 1958.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet
(Moscow State University)

SUBMITTED: July 1, 1960

Card 7/8

"APPROVED FOR RELEASE: 04/03/2001

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APPROVED FOR RELEASE: 04/03/2001

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work and for a discussion. 11. 11. 11.

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"APPROVED FOR RELEASE: 04/03/2001

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APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001756620015-8"

MARCHENKO, V.F.; TROFIMENKO, I.T.

Experimental study of a subharmonic microwave generator.
Radiotekh. i elektron. 9 no.5:822-829 My '64.

(MIRA 17:7)

1. Fizicheskii fakul'tet Moskovskogo gosudarstvennogo universi-
teta imeni Lomonosova.

AKHMANOV, S.A.; GORSHKOV, A.S.; TROFINENKO, I.T.

Frequency division on superhigh frequencies by means of a
traveling-wave tube. Izv. vys. ucheb. zav.; radiofiz. 4
no.2:309-318 '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet.
(Frequency changers) (Traveling-wave tubes)

USSR/Soil Science - Tillage. Amelioration. Erosion.

J

Abs Jour : Ref Zhur Biol., No 1, 1959, 1412

Author : Rubilin, Ye.V., Trofimko, K.I.

Inst : Severo-Osetinsk Agricultural Institute

Title : Soil Amelioration Characteristics of the Land Used by
the Kolkhozes of Kizlyar

Orig Pub : Tr. Severo-Osetinsk. s.-kh. in-ta, 1956, 17, 13-37

Abstract : The described territory is presented as a poorly drained plain, at several points undrained, composed of river and lake-estuary deposits. The latter were usually salty. The depth of the ground waters was 10 - 300 cm. Soils here were formed under conditions of excessive ground moisture. Through indications of agricultural productivity there were isolated meadow solonchak soils, meadow-bog solonchak and alluvial soils weakly touched

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USSR/Soil Science - Tillage. Amelioration. Erosion.

J

Abs Jour : Ref Zhur Biol., No 1, 1959, 1412

by soil formation, meadow-bog solonchak soils, bog
solonchak soils, and solonchak soils. The morphology
and some physical-chemical properties of the soils are
described. Meadow solonchak soils were the best in the
investigated territory. -- G.V. Zakhar'ina

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- 35 -

KOPEYKIN, Yuriy Vissarionovich; RUBILIN, Ye.V., prof., rukovoditel' raboty;
TROFIMENKO, K.I., dotsent, rukovoditel' raboty; FILIPENOK, T.G., red.

[Soils of the Alkhanchurt Valley.] Pochvy Alkhan-Churtskoi
doliny. [Groznyi] Checheno-Ingushskoe knizhnoe izd-vo, 1963.
14lp. (Grozny. Checheno-Ingushskii nauchno-issledovatel'skii
institut, Izvestiia, vol.7). (MIRA 17:12)

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7,
p 126 (USSR) 14-57-7-14970

AUTHOR: Trofimenko, K. I.

TITLE: A Description of the Chestnut Soils of Eastern
Ciscaucasia (K kharakteristike kashtanovykh pochv
Vostochnogo Predkavkaz'ya)

PERIODICAL: Tr. Severo-Osetinsk. s.-kh. in-ta, 1956, Vol 17,
pp 39-54

ABSTRACT: The eastern Ciscaucasia represents an alluvial-delta
plain sloping from 300 m down to 26 m from southwest
to northeast. Its western part is covered with
ancient alluvial loess-type loams and clays which
usually contain carbonates. The eastern part is made
up of marine deposits. The climate is arid, with an
annual precipitation of 290 mm in the east and 400 mm
in the west. Precipitation reaches its maximum in

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14-57-7-14970

A Description of the Chestnut Soils (Cont.)

the first half of the summer. The western steppes, covered with different kinds of grasses and cereals, change in the east either to steppes bearing cereals or to deserts with wormwood and grasses or with wormwood alone. The western dark chestnut soils change correspondingly to chestnut and light chestnut soils in the east, and to brown soils toward the shores of the Caspian Sea. The soil cover is characteristically varied (chestnut, solonetz, and solonchak soils). The author notes that the chestnut soils of the eastern Ciscaucasia are thicker than similar soils found in the southern and southeastern USSR. This is due to the less continental climate, to the high carbonate content at the surface, and to the absence of compacted layers (except in light chestnut soils with various degrees of salinity). At the present time ground water lowering and biological desalting are placing the solonchak and solonetz soils of the eastern Ciscaucasia in the realm of relict features. A bibliography of 41 titles is included.

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E. K.

USSR/Soil Science. Soil Genesis and Geography.

J-2

Abs Jour : Ref Zhur - Biol., No 5, 1958, 20030

Author : Trofimenko, K.I.

Inst : Severo-Osetinskiy Agricultural Institute.

Title : A Contribution to the Characterization of the Chestnut
Soil of the Eastern Caucasus Foot Hill Region.

Orig Pub : Tr. Severo-Osetinsk. s.-kh. in-ta, 1956, 17, 39-54

Abstract : Chestnut soil occupies 22% of the territory of the
Eastern Caucasus foot hill region. The author differen-
tiates the dark chestnut, chestnut and light chestnut
soils. The latter are characterized by thin A + B hori-
zons (~ 45 cm) and a humus content of 2-3%. The cation-
exchange capacity of light chestnut soil is 16.22-20.42
milliequivalents. Ca predominates in the soil-absorbing
complex. Carbonate, washed out and saline light chestnut

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USSR/Soil Science - Soil Genesis and Geography.

Abs Jour : Ref zhur - Biol., No 5, 1958, 20030

soils are encountered. The latter are characterized by light salinity at 3-5% Na of the absorptive capacity. The chestnut soils have a humus horizon ~60 cm thick, containing 3-4% humus. Carbonate, washed out and weakly salty chestnut soils are found. The dark chestnut soils are characterized by the A + B horizons being 80 cm in thickness and containing 4-5% of humus. These soils are the most valuable reserve of arable land in the territory described. The average store of humus in these soils is ~300 tons per hectare, with 0.23% N content, the free P 22 milligrams and K 44 milligrams per 100 grams of soil. Ca is predominant in the absorbing complex. The carbonate dark chestnut soils effervescing at the surface are the most widespread. The chestnut soils of the foot hill country of the Caucasus differ from these soils by its high degree of carbonation, the considerable

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USSR/Soil Science - Soil Genesis and Geography.

J-2

Abs Jour : Ref Zhur - Biol., No 5, 1958, 20030

thickness of the soil profile and the absence of packed horizons with the exception of the alkaline varieties.

Card 3/3

- 6 -

TROFIMENKO, K. I. Cand. Geolog-Mineralog Sci.

Dissertation: "Soils on the Right Bank of the Terek River in North Osetia." Soil
Inst. imeni V. V. Dokuchayev. Acad Sci. USSR. 5 Mar 47.

SO: Vechernyaya Moskva, Mar, 1947 (Project #17836)

TROFIMENKO, K.I.

F.N. Kurakin and K.I. Trofimenko, Ordena Lenina semenovodcheskiy sovkhov "Kuban"
/ The "Kuban" Seed-Growing sovkhov, decorated with the Order of Lenin /, Sel' khoz-
giz, 8 sheets.

The book tells of the achievements of one of the best sovkhoves of the USSR,
which obtains high yields of agricultural crops and accesssfully develops livestock
farming.

Intended for agricultural workers.

SO: U-6472, 15 Nov 1954

PAVLUKHIN, O.I.; SAMYLIN, A.K.; SIDASH, Ye.S.; TROFIMENKO, M.S.

Recording device with noncontact compensation unit. Avtom.1
prib. no.4:60-63 O-D '62. (MIRA 16:1)

1. Ukrainskiy nauchno-issledovatel'skiy trubnyy institut.
(Recording instruments)

ANGEL'YEV, D.; TROFIMENKO, N.; SHAKALOV, O.

The crop depends on effort and knowledge. Zemledelie 26
no.5:21-28 My '64. (MIRA 17:6)

1. Direktor sovkhoza "Gigant", Rostovskoy obl. (for Angel'yev).
2. Glavnyy agronom sovkhoza "Gigant", Rostovskoy obl. (for Trofimenko).
3. Starshly agronom sovkhoza "Gigant", Rostovskoy obl. (for Shakalov).

TROFIMENKO, N.; SHAKALOV, O.: TURCHENKOVA G.

Chemicalization as a way for increasing the production of grain.
(MIRA 17:11)
Zemledelie 26 no.9:79 S '64.

1. Glavnyy agronom sovkhoza "Gigant" Rostovskoy oblasti (for Trofimenko).
2. Starshiy agronom-polevod sovkhoza "Gigant" Rostovskoy oblasti (for Shakalov).
3. Zaveduyushchaya agro-khimicheskoy laboratoriyey sovkhoza "Gigant" Rostovskoy oblasti (for Turchenkova).

ANGEL'YEV, D.; TROFIMENKO, N.; SOLDATOV, I.; SHVYDCHENKO, L.I., red.;
POPOVA, N.A., tekhn. red.

[A centner of grain in 38 minutes; from the practices of the "Gigant"
State Farm in Rostov Province] Sentner zerna - za 38 minut; iz opyta
sovkhoza "Gigant," Rostovskoi oblasti. Rostov-na-Donu. Rostovskoe
knizhnoe izd-vo, 1961. 20 p. (MIRA 15:11)

1. Direktor sovkhoza "Gigant" Rostovskoy oblasti (for Angel'yev).
2. Glavnyy agronom sovkhoza "Gigant" Rostovskoy oblasti (for
Trofimenko).
3. Glavnyy inzhener sovkhoza "Gigant" Rostovskoy
oblasti (for Soldatov).

(Grain)

TROFIMENKO, N. M. Cand Biol Sci -- "The yeast flora of Moldavia and its importance for viniculture." Kishinev, 1960 (Min of Agr MSSR. Sci Res Inst of Horticulture, Viniculture and Viticulture). (KL, 4-61, 193)

-141-

TROFIMENKO, N.M.; GARKAVENKO, A.I.

Production of fodder yeast. Izv. AN Mold. SSR no.7:10-13
'62. (MIRA 16:2)
(Moldavia—Yeast as feed)

KOTELEV, V.V.; TROFIMENKO, N.M.; DEMIRCHOGLYAN, B.L.; NIKOLAYEVA, A.V.

Assimilation of biomycin and terramycin adsorbed on clays by
chickens. Izv. AN Mold. SSR no.7:43-46 '62. (MIRA 16:2)
(Aureomycin) (Terramycin)
(Poultry--Feeding and feeds)

GUBKIN, A.N.; SERGIYENKO, V.F.; TROFIMENKO, N.M.

Theory of electret vibration pickups. Prib. i tekhn. eksp. 6
no.2:166-169 Mr-Apr '61. (MIRA 14:9)

1. Fizicheskiy institut AN SSSR.
(Electrets) (Transducers)

TROPIMENKO, N.G.; TIKHONOVICH, S.Ye.; ZABOROVSKIY, B.A.

Designing developing machines for processing black-and-white
motion-picture film copies. Tekh.kino i telev. 4 no.9:41-43 S
'60. (MIRA 13:9)
(Motion-picture industry--Equipment and supplies)

21419

S/120/61/000/002/032/042
E210/E594

9,2180(1144,1137,2303)

AUTHORS: Gubkin, A. N., Sergiyenko, V. F. and Trofimenko, N.M.

TITLE: On the Theory of Vibroprobes with Electrets

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No.2, pp.166-169

TEXT: Electrets are sources of a constant electric field and can be used in instruments, the operation of which is based on inducing an a.c. current in the field of the electret. Several designs of electret vibroprobes are described in literature but, according to the author, the theory of their operation has not been evolved. Fig.1 shows a diagrammatic representation of an electret between two metallic electrodes A and B which are connected through an external resistance R ("short-circuited" electret). On the basis of electrostatic formulae, the following relation is valid

$$\sigma = \sigma_0 / (\epsilon \ell / L + 1) \quad (1)$$

where σ is the density of the charge induced on the electrodes, σ_0 - electret surface charge density, L - "electret thickness", ℓ - the gap between the electrode A and the surface of the electret. In the case that the electrode A vibrates relative to Card 1/6

On the Theory of Vibroprobes...

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the electret, an alternating current, $I = S \, d\sigma/dt$, will flow in the external circuit, S being the area of the electret surface. The potential difference can be expressed by the following equation:

$$U = \frac{\epsilon S}{L} \frac{\sigma_0}{(\epsilon \ell/L + 1)^2} \frac{d\ell}{dt} \frac{R_0}{(1 + R_0/R)} \quad (2)$$

where R is the external resistance of the circuit, R_0 - internal capacitive reactance of the short-circuited electret. Eq.(2) is the basic equation characterizing the operation of various electret instruments (microphones, telephones, vibration probes etc.). Accordingly, the voltage on the input resistance is proportional to the relative speed of displacement of the electrode A . In order that the output signal is proportional to the relative electrode displacement and not to the speed, it is necessary to integrate Eq.(2) with time. By differentiating Eq.(2) with time we obtain an output signal that is proportional to the relative acceleration of the mobile electrode. The sensitivity of the vibroprobe as regards acceleration can be expressed by

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On the Theory of Vibroprobes...

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$$N_y = \frac{U_o}{d_o \omega^2} = A \sigma_o \frac{z}{\omega_o (1 - z^2)} \frac{R_o}{(1 + R_o/R)} \quad (6)$$

and, as regards displacement, by

$$N_c = \frac{U_o}{d_o} = A \sigma_o \frac{z^2 \omega}{(1 - z^2)} \frac{R_o}{(1 + R_o/R)} \quad (7)$$

The two extreme cases are considered: 1) A rigid membrane, $z = \omega/\omega_o \ll 1$ (ω_o - natural frequency of the mobile electrode). At low frequencies the sensitivity of acceleration probes will be directly proportional to the vibration frequency ω or will not be dependent on the frequency ω if the output signal is integrated with time; 2) a soft membrane, $z = \omega/\omega_o \gg 1$. In this case it is better to use an electret vibroprobe for measuring displacement. Verification of the results was carried out by means of an experimental electret vibroprobe made of a calcium titanate electret B ($s = 150$, 2.5 cm diameter, 0.15 cm thick) fixed into a special insulator base C. The membrane E is above

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On the Theory of Vibroprobes...

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the electret surface, the air gap between the membrane and the electret surface was 0.015 cm. A thin brass foil was used as a second electrode. The membrane was connected to the metallic body A which was grounded; from the second electrode a lead D to the external circuit was provided. The surface density of the electret charge equalled 2×10^{-9} Coulomb/cm². The signal was fed to the input resistance of a tube voltmeter with $R = 2$ megohm. The experimentally determined resonance frequency of the mobile electrode f_0 equalled 1650 c.p.s. Good agreement between calculated and experimental results were obtained. Fig.3 shows the sensitivity of the vibroprobe with respect to acceleration N_y (mV/g) as a function of the vibration frequency (c.p.s.). It is pointed out that electret vibroprobes operate without external supply sources and, in contrast to electromagnetic probes, the alternating current is induced by the electric field and not by the magnetic field. If the system, electret system-mobile electrode, is considered as a plane condenser, a certain analogy can be arrived at between electrets and capacitance probes, the main difference being that capacitance probes require an external field.

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On the Theory of Vibroprobes ...

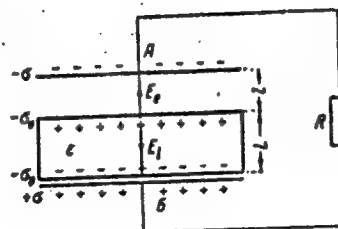
S/120/61/000/002/032/042
E210/E594

Acknowledgments are expressed to V. A. Shmelev for evaluating the results and to G. A. Rodionova for her assistance in the experimental work. There are 3 figures and 5 references: all Soviet.

ASSOCIATION: Fizicheskiy institut AN SSSR (Physics Institute AS USSR)

SUBMITTED: April 27, 1960

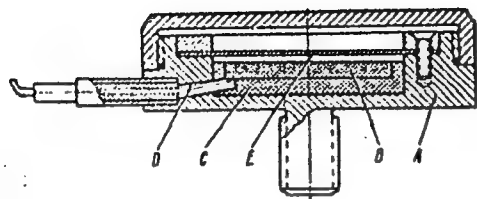
Fig.1



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On the Theory of Vibroprobes ...

Fig. 2

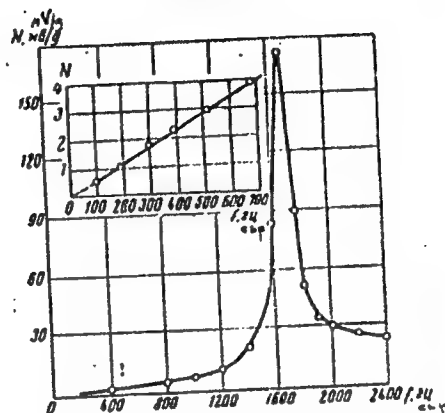


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Fig. 3



MANEVICH, A.A. (Kemerovskaya oblast', g. Stalinsk, Shkol'naya ul., d.28, kv.22)
TROPIMENKO, N.Ya. (Kemerovskaya oblast, g. Stalinsk, Voroshilovskoye
shosse, d.3, komnata 107)

shosse, d.3, Komnata 1077

Tezan-25 in the prevention and treatment of radiation sickness in
cancer patients [with summary in English]. Vop.onk. 3 no.6:724-728
(MIRA 11:2)
157.

57.

1. Iz kafedry onkologii (i.o.zav. - dots. A.A.Manevich) Stalinskogo instituta usovershenstvovaniya vrachev (dir. - prof. A.N.Araviyskiy) i Stalinskogo gorodskogo onkologicheskogo dispansera (glavnyy vrach - Ye.N.Nikolayeva)

PROTECTION

(RADIATION PROTECTION

ADIAN PROTECTION
thezan 25 in radiother. of cancer)

(NEOPLASMS, ther.

EOPLASMS, ther.
radiother., radiation protection with thesan 25)

DCMAR ADSKY, A.V.; NOSKOVA, L.I. ; TROFIMENKO, N.Z.

Dry culture media from acid hydrolysates of blood proteins for
the cultivation of the plague microbe. Dokl. Irk. gos. nauch.-
issl. protivochum. inst. no.5:57-58 '63 (MIRA 18:1)

NOSKOVA, L.I.; TROFIMENKO, N.Z.; KOLESINSKAYA, N.I.

Dry bouillon for the cultivation of the plague microbe under
aeration. Dokl. Irk. gos. nauch.-issl. protivochum. inst. no.5:
59-60 '63 (MIRA 18:1)

TROFIMEIKO, N.Z.; DOMARADSKIY, I.V.; NOSKOVA, L.I.; MIKHALEVA, V. Ya.

Media from soybean acid hydrolysate for the cultivation of the
plague microbe. Dokl. Irk. gos. nauch.-issl. protivochum. inst.
no.5:48-52 '63 (MIRA 18:1)

NOSKOVA, L.I.; TROFIMENKO, N.Z.; MIKHNO, V.S.

Meat-acid hydrolysate for growing cholera and plague microbes.

Izv.Irk.gos.nauch.-issl.protivochum.inst. 18:111-115 '58.

(MIRA 13:7)

(BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

(PASTEURILLA PESTIS) (VIBRIO COMMA)

DOMARADSKIY, I.V.; TROFIMENKO, N.Z.; NOSKOVA, L.I.

Method for the preparation of acid hydrolysates of meat for
culturing the plague microbe. Izv. Irk. gos. nauch.-issl. protivochum.
inst. 21:370-373 '59. (MIRA 14:1)
(BACTERIOLOGY--CULTURES AND CULTURE MEDIA) (PLAGUE)

TROFIMENKO, N.Z.; VASIL'YEVA, Z.I.; KROTOVA, V.A.

Change in the amino acid composition of the nutrient medium
in deep culturing of the plague microbe. Report No.1. Izv.Irk.
gos.nauch.-issl.protivochum.inst. 18:117-123 '58.

(MIRA 13:7)

(AMINO ACID METABOLISM)

(PASTEURILLA PESTIS)

TIMOFEYeva, L.A.; TROFIMENKO, N.Z.

Dry color medium for the diagnosis of some causative agents
with a natural focus. Izv. Irk. gos. nauch.-issl. protivochum.
inst. 20:339-341 '59. (MIRA 13:7)
(BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

TROFIMENKO, P.M., gornyy inzhener

Technology of mining without the use of miners in steeply
dipping Donets Basin seams. Ugol' Ukr. 5 no.12:11-13 D '61.
(MIRA 14:12)

1. Dnepropetrovskiy gornyy institut.
(Donets Basin—Coal mines and mining)

TROFIMENKO, P.M., gornyy inzhener

Some problems in mining steeply pitching seams with coal
plows. Ugol' Ukr. 3 no.9:12-15 S '59. (MIRA 13:2)
(Mining engineering) (Coal mining machinery)

NEKRASOVSKIY, Ya.E., doktor tekhn.nauk; TROFIMENKO, P.M., gornyy inzh.

Basic design of a coal plow and plowing unit for mining
thin steeply pitching coal seams. Ugol' Ukr. 4 no.5:
3-6 My '60. (MIRA 13:8)

1. Dnepropetrovskiy gornyy institut.
(Coal mining machinery)